

In the Claims

The claims are not being amended, but are reproduced here for Examiner's convenience:

23. A method of obtaining a user's identity by voice, comprising:

receiving a set of at least one known grammar and a set of at least one known voiceprint corresponding to a plurality of utterances from each of a first plurality of  
5 users;

for each of the first plurality of users, associating the set of at least one known grammar and the set of at least one known voiceprint with an identifier of said user;

10 receiving at least one utterance from a subject user;

performing a voice recognition on at least one of the at least one utterance received from the subject user, said voice recognition being different from extracting a grammar from a first at least one of the at least one utterance  
15 received from the subject user;

responsive to the voice recognition technique, selecting from the first plurality of users a second plurality of users, smaller than the first plurality of

users by a factor of at least ten, for which the first  
20 voice recognition most closely matches at least one  
selected from the set of at least one grammar and the set  
of at least one voiceprint associated with the identifiers  
of the second plurality of users;

from the second plurality of users, selecting the user  
25 for which a grammar of the first at least one of the at  
least one utterance received from the subject user most  
closely matches at least one of the set of at least one  
grammar associated with the identifiers of the second  
plurality of users;

30 verifying a voiceprint of at least one of the at least  
one utterance has at least a similarity to the set of at  
least one voiceprint of the selected user; and

responsive to the verifying step, providing the  
identifier of the selected user as the identifier of the  
35 subject user.

24. The method of claim 23 wherein the voice  
recognition comprises extracting a grammar from a second at  
least one of the at least one utterance received from the  
subject user, the second at least one of the at least one  
5 utterance having at least one difference from the first at  
least one of the at least one utterance.

25. The method of claim 23 wherein the voice recognition technique comprises speaker independent voice recognition.

26. The method of claim 23 wherein the first at least one of the at least one utterance comprises a password.

27. The method of claim 23 wherein a number of the second plurality of users corresponds to a constant.

28. The method of claim 23 wherein the second plurality of users corresponds to users for which the voice recognition technique yields a confidence level exceeding a threshold.

29. The method of claim 23 wherein at least one of the at least one utterance may be other than a real word.

30. A system for obtaining a user's identity by voice, comprising:

storage for storing and providing at an output a set of at least one known grammar and a set of at least one  
5 known voiceprint corresponding to a plurality of utterances from each of a first plurality of users, for each of the first plurality of users, the set of at least one known grammar and the set of at least one known voiceprint being associated with an identifier of said user;

10        a first recognizer having an input operatively coupled  
for receiving at least one utterance from a subject user,  
the first recognizer for performing a voice recognition on  
at least one of the at least one utterance received from  
the subject user, said voice recognition being different  
15    from extracting a grammar from a first at least one of the  
at least one utterance received from the subject user, the  
first recognizer additionally for, responsive to the voice  
recognition technique, selecting from the first plurality  
of users a second plurality of users, smaller than the  
20    first plurality of users by a factor of at least ten, for  
which the first voice recognition most closely matches at  
least one selected from the set of at least one grammar and  
the set of at least one voiceprint associated with the  
identifiers of the second plurality of users received at a  
25    second input coupled to the storage output, and for  
providing at an output identifiers of the second plurality  
of users;

      a second recognizer having a first input for receiving  
the identifiers of the second plurality of users, and a  
30    second input for receiving at least one of the at least one  
utterance from the subject user, the second recognizer for  
extracting a grammar from the at least one of the at least  
one utterance received at the second second voice

recognizer input, and for selecting from the second  
35 plurality of users the user for which the grammar extracted  
most closely matches at least one of the set of at least  
one grammar associated with the identifiers of the second  
plurality of users received at a third input coupled to the  
storage output, and for providing an identifier of the  
40 selected user at an output;

a verifier having a first input coupled to the second  
recognizer output, the verifier for obtaining a voiceprint  
of at least one of the at least one utterance received at a  
second input, and for verifying a voiceprint of at least  
45 one of the at least one utterance has at least a similarity  
to the set of at least one voiceprint of the selected user  
received at a third input coupled to the storage output;  
and responsive to said verification, providing at an output  
the identifier of the selected user as the identifier of  
50 the subject user.

31. The system of claim 30 wherein the first  
recognizer performs the voice recognition by extracting a  
grammar from a second at least one of the at least one  
utterance received from the subject user, the second at  
5 least one of the at least one utterance having at least one

difference from the first at least one of the at least one utterance.

32. The system of claim 30 wherein the first recognizer performs the voice recognition using speaker independent voice recognition.

33. The system of claim 30 wherein the first at least one of the at least one utterance comprises a password.

34. The system of claim 30 wherein a number of the second plurality of users corresponds to a constant.

35. The system of claim 30 wherein the second plurality of users corresponds to users for which the voice recognition performed by the first recognizer yields a confidence level exceeding a threshold.

36. The system of claim 30 wherein at least one of the at least one utterance may be other than a real word.

37. A computer program product comprising a computer useable medium having computer readable program code embodied therein for obtaining a user's identity by voice, the computer program product comprising computer readable  
5 program code devices configured to cause a computer to:

receive a set of at least one known grammar and a set of at least one known voiceprint corresponding to a

plurality of utterances from each of a first plurality of users;

10       for each of the first plurality of users, associate the set of at least one known grammar and the set of at least one known voiceprint with an identifier of said user;

          receive at least one utterance from a subject user;

          perform a voice recognition on at least one of the at  
15   least one utterance received from the subject user, said voice recognition being different from extracting a grammar from a first at least one of the at least one utterance received from the subject user;

          responsive to the voice recognition technique, select  
20   from the first plurality of users a second plurality of users, smaller than the first plurality of users by a factor of at least ten, for which the first voice recognition most closely matches at least one selected from the set of at least one grammar and the set of at least one  
25   voiceprint associated with the identifiers of the second plurality of users;

          from the second plurality of users, select the user for which a grammar of the first at least one of the at least one utterance received from the subject user most  
30   closely matches at least one of the set of at least one

grammar associated with the identifiers of the second plurality of users;

verify a voiceprint of at least one of the at least one utterance has at least a similarity to the set of at  
35 least one voiceprint of the selected user; and

responsive to the computer readable program code devices configured to cause the computer to verify, provide the identifier of the selected user as the identifier of the subject user.

38. The computer program product of claim 37 wherein the computer readable program code devices configured to cause the computer to perform voice recognition comprise computer readable program code devices configured to cause  
5 the computer to extract a grammar from a second at least one of the at least one utterance received from the subject user, the second at least one of the at least one utterance having at least one difference from the first at least one of the at least one utterance.

39. The computer program product of claim 37 wherein the computer readable program code devices configured to cause the computer to perform voice recognition comprise computer readable program code devices configured to cause



5 the computer to perform speaker independent voice recognition.

40. The computer program product of claim 37 wherein the first at least one of the at least one utterance comprises a password.

41. The computer program product of claim 37 wherein a number of the second plurality of users corresponds to a constant.

42. The computer program product of claim 37 wherein the second plurality of users corresponds to users for which the voice recognition technique yields a confidence level exceeding a threshold.

43. The computer program product of claim 37 wherein at least one of the at least one utterance may be other than a real word.